

Application No.: 10/803384
Docket No.: HT4000USNA

Page 2

REMARKS

Reconsideration is respectfully requested of the final rejections of claims 1, 3-11, and 13-29 under the provisions of 35 U.S.C. 103(a). These claims remain under consideration without amendment in traversal of the Office position.

Accompanying the present response in this Request for Continuing Examination is a Declaration Under 37 C.F.R. 1.132 of Dr. Reiyao Zhu, the inventor of the present patent application. This Declaration addresses the inapplicability of Smith USP 4,865,906 applied in paragraphs 7 and 8 of the final Office communication.

In the remarks below "et al." has been deleted in many instances in referencing the names of the patentees applied in the rejections under 35 U.S.C. 103(a).

A purpose of the present response is an attempt to clarify the issues in the present patent application for applicant's position opposite wording in the Office rejections. Accordingly an initial section in this response does not follow the numbered paragraphs of the Office communication. The following represents an attempt to clarify issues.

Issue No. 1: Meaning of "about 70%" opposite Office position "is considered to read on 60%."

This issue is a question of semantics – as opposed to a substantive issue in the meaning of 35 U.S.C. 103(a). The issue is whether "about 70% reads on "60%" with the following wording present in paragraph 9 of the Office Action communication:

In response to the examiner asserting that about 70% is considered to read on 60%, the applicant request clarification of the meaning of "read on." The examiner has cited the dictionary definition of the word "read" for applicant's convenience wherein it is disclosed that "read" can be defined as "To discern or anticipate through examination or observation."

The applicant asserts that about 70% does not encompass or read on 60% because there is a 10% difference between 70% and 60%. The examiner respectfully disagrees. Although the examiner agrees that $70-60=10$, the reference (Campbell) clearly discloses that about 70% modacrylic fiber is preferably present (column 4, lines 9-

Application No.: 10/803384
Docket No.: HT4000USNA

Page 3

14). Rather than ignore the word "about" the examiner has given the word meaning.

In response to the above Office wording several comments are appropriate. The above dictionary definition relied upon for the Office position in fact supports applicant's position for several reasons.

A first reason is "about" is an indefinite term while the dictionary definition of read namely "To discern or anticipate through examination or observation" has a degree of precision. It is respectfully submitted that it is improper to equate wording which is indefinite with wording which has precision.

A second reason can be expressed mathematically. The Office position is "about 70%" reads on "60%," i.e. a difference of 10%. Then a series of questions can be asked of the Examiner?. Does the Office position of "read on" include a difference of "11%?" If yes, does the Office position include a difference of 15%?, a difference of 20%?, a difference of 30%?, a difference of 50%?, etc. The point being made is that a degree of precision with "read on" vs. "about" is absent in the present fact situation.

However, as set forth above, this issue is considered to be an issue of semantics rather than a substantive issue.

Issue 2: **Incorrect Office Interpretation is present concerning 50% Modacrylic Fiber in Campbell U.S. Patent 6,787,228.**

A quotation is present from the Office communication in Issue 1 above. This quotation is immediately followed in the same paragraph by wording of:

In addition, Campbell clearly discloses that about 70% modacrylic fiber is preferably present (column 4, lines 9-14) in order to meet specific standards (column 4, lines 57-67), but Campbell discloses that the fabric may have as little as about 50% modacrylic fiber to provide excellent flame resistance (column 4, lines 17-21). (emphasis added)

In reply it is respectfully submitted the emphasized wording is clearly erroneous. Campbell's column 4, lines 17-21 (but expanded an additional two lines to 15-17) reads:

Application No.: 10/803384
Docket No.: HT4000USNA

Page 4

Modacrylics are polymers that have between 35 percent and 85 percent **acrylonitrile units**, modified by other chemical modifiers such as vinyl chloride. All modacrylics have a flame-resistant character to some extent, however, it has been found that fabrics formed from modacrylic yarns having at least about 50 percent by weight of **acrylonitrile units** will provide excellent flame resistance. (emphasis added for acrylonitrile units)

The disclosure from Campbell is specific to acrylonitrile units in a modacrylic polymer. As set forth between 25 percent and 85 percent acrylonitrile units are present with at least 50 percent by weight of acrylonitrile units providing excellent flame resistance. The term "units" references "**acrylonitrile units**" in a polymer. The acrylonitrile units in a polymer have nothing to do with the amount and percentage of acrylonitrile fibers in a yarn or fabric.

Reconsideration and removal of the Office position is requested.

Issue 3: **What is the Scope of "About 70% Modacrylic" in Campbell USP 6,787,228?**

A critical issue in applicant's position is that one of ordinary skill in the art in the meaning of 35 USC 103(a) would not employ 60% modacrylic fibers (i.e. the closest comparison from the upper limit of claim 1) in view of the teachings of "about 70% modacrylic" which represents the lower limit of Campbell.

The following wording on page 3 of the Office communication is noted:

:

In the event that it is shown that about 70% does not read on 60%, Campbell also discloses that modacrylic fibers are present for flame resistance (column 3, lines 18-23) while the aramid fibers are present for tensile strength (column 3, lines 25-40).

. . .

In accordance with MPEP 2144.05 (III), a *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997)

Application No.: 10/803384
Docket No.: HT4000USNA

Page 5

In the first quotation above, applicants directly accept a burden of proof set forth in the Office communication namely "In the event it is shown that about 70% does not read on 60% ...".

This burden of proof is that one of ordinary skill in the art would not employ 60% acrylonitrile fibers from the disclosure of about 70% of Campbell to achieve a yarn, fabric and apparel meeting the requirements set forth in Campbell. The burden of proof also relies on the second quotation above from the Office communication namely a *prima facie* case of obviousness can be rebutted "by showing that the art, in any material respect, teaches away from the claimed invention" (with the Office's detailed citation of the *In re Geisler* decision).

Turning to the issue at hand, applicant is mindful of use of "preferred" in a context of "preferred embodiment opposite" at least about 70 percent modacrylic fibers present in Campbell on column 4, lines 9 to 14 as follows:

In a preferred embodiment, the yarn is a blend comprising at least about 70 percent modacrylic fibers, combined with at least about 3 percent high performance, high energy absorptive fibers of material having a tenacity of at least about 4 grams/denier, flame resistance, affinity for high-visibility dyestuffs, and good energy absorption.

However, it is respectfully submitted that such "preferred embodiment" wording must be read in the context of the disclosure and teachings of the entire patent application. Attention is respectfully directed to the following wording present in Campbell on column 4, lines 57 to 65 as follows:

Fabric formed according to the present invention requires at least about 70 percent modacrylic fibers and at least about 3 percent aramid fibers when blended with one of the aforementioned energy absorptive materials in order to meet the ANSI, ASTM, and NFPA standards described above. **Preferably, fabric with blends containing about 90 percent or more of the modacrylic fibers and at least about 3 percent of the high energy absorptive fibers provides the most acceptable results.** The following Table I is exemplary of satisfactory fabric constructions that have been formed according to the present invention. (emphasis added)

Table 1 on column 5, lines 1 to 13 shows a minimum 90% modacrylic fiber content with construction B having a 95% modacrylic content.

It may be helpful for emphasis to repeat the above highlighted wording in support of applicant's position.

Application No.: 10/803384
Docket No.: HT4000USNA

Page 6

"Preferably, fabric with blends containing about 90 percent or more of the modacrylic fibers . . . provides the most acceptable results."

Therefore the teachings of Campbell to one of ordinary skill in the art is to have a high acrylonitrile content of at least 90% in order to achieve "the most acceptable results." It is considered that one of ordinary skill in the art would expect results to be less acceptable as the acrylonitrile content falls below 90%. Based on less acceptable results, it can be concluded that using less and less acrylonitrile and obtain less and less acceptable means that a value of "about 70% acrylonitrile" is in fact not a lower limit of 70% but some number above.

Conventional wisdom to one of ordinary skill in the art would dictate that less and less acceptable results should not be obtained. Yet the Office position is predicated on lowering the acrylonitrile content to an amount below within the teachings of Campbell.

With *In re Geisler* cited in the Office communication, applicant also relies on this decision to rebut the Office position.

It is noted the Office communication primarily on page 4 discusses the Geisler fact situation and the Court's holding including the wording:

Thus while Zehender expresses a preference for a thicker protective layer of 200-300 Angstroms, at the same time it provides the motivation for one of ordinary skill in the art to focus on thickness levels at the bottom of Zehender's 'suitable' range-about 100 Angstroms- and to explore thickness levels below that range. The statement in Zehender that "[i]n general, the thickness of the protective layer should be not less than about [100 Angstroms]" falls far short of the kind of teaching that would discourage one of skill in the art from fabricating a protective layer of 100 Angstroms or less. [W]e are therefore 'not convinced that there was a sufficient teaching away in the art to overcome [the] strong case of obviousness' made out by Zehender.").

The issue is Geisler is obviousness in the meaning of 35 U.S.C. 103(a) of a thinner and thinner layer which would serve as a protective layer. The issue in the present fact situation is not only reducing the acrylonitrile fiber content in comparison to Campbell but also (as will be further discussed) adding another fiber, i.e. cotton, which is required to be present in an amount not lower than 15 weight percent (on a basis of modacrylic, cotton and aramid) fibers..

Application No.: 10/803384
Docket No.: HT4000USNA

Page 7

As only evidenced by the Abstract of Campbell, a requirement is present both for flame resistance and arc thermal performance exposure. The Abstract on page 1 of this publication states a requirement namely, "The fabric meets the American Society for Testing and Materials standard for flame resistance and the National Fire Protection Association standard for arc thermal performance exposure." Changing the requirements of Campbell by both an acrylonitrile reduction and the addition of a substantial amount of cotton clearly refutes a prima facie case of obviousness in accordance with the Ziegler decision. It is respectfully submitted that the Office has not rebutted applicant's position in the meaning of 35 U.S.C. 103(a).

Issue No. 4: What are the teachings of Nelson USP 4,625,491 concerning suitability of cotton?

Nelson USP 4,025,491 has been relied upon in the Office communication to modify the teachings and disclosure of Campbell USP 6,787,228 (paragraphs 3, 4, 5, and 6) or Smith (paragraph 7 and 8).

It may be helpful to initially set forth the Office wording concerning Nelson present in the Office communication present on page 3, first complete paragraph, second sentence and paragraph bridging pages 8 and 9 in Response to Arguments as follows:

Nelson also discloses that it is known in the flame resistant fabric art to blend synthetic fibers with between 15 to 65 weight percent cotton to provide the fabric with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity.

. . .

The applicant asserts that there is no motivation to add cotton fibers to the yarn, as taught by Nelson, because Nelson discloses that hydrophilic (cotton) fibers have poorer fire-retardant properties than polyester fibers and that there is a need for polyesters having high concentration of fire-retardants (paragraph bridging columns 1 and 2). The examiner respectfully disagrees. Nelson clearly discloses that it is known in the flame resistant fiber art to add cotton fibers to provide the fiber with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity (see entire document including column 1, lines 62-66 and the paragraph bridging columns 4 and 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add

Application No.: 10/803384
Docket No.: HT4000USNA

Page 8

cotton fibers to the yarn, as taught by Nelson, because the cotton fibers would provide the fire-retardant yarn with the desired aesthetic hand properties, moisture absorption properties, and minimized static electricity and because some applications desire hand properties, moisture absorption properties, and/or minimized static electricity properties over increased fire-retardant properties.

In the first quotation above an Office generalization is made of between 15 to 65 weight present cotton being known in "the flame resistant fabric art."

In the second quotation, the Office position disagrees with applicant based on Nelson disclosing "that hydrophilic (cotton) have poorer fire-retardant properties than polyester fibers and that there is a need for polyesters having high concentrations of fire retardants (paragraph bridging columns 1 and 2). The second quotation from the Office communication specifically includes wording "(See entire document including column 1, lines 62-66 and the paragraph bridging columns 4 and 5)."

In reply it is respectfully submitted the Office position gives a flawed reading of Nelson and generalizes in an incorrect manner. In support of this position is text from Nelson from the sections quoted from the Response to Arguments of the Office communication namely column 1, lines 62-66 but continued (highlighted) to an omitted last portion of line 66 and omitted lines 67 and 68 and the paragraph bridging columns 4 and 5:

Generally polyethylene terephthalate fibers are blended with hydrophilic fibers, such as cotton, rayon, wool, etc. to provide the textile with aesthetically desirable hand, moisture absorption to minimize static electricity, etc. **Unfortunately, blends of polyester and hydrophilic fibers have poorer fire-retardant properties than the individual fibers.** (emphasis added to lines 66-68)

. . .

The preferred polyesters of this invention, wherein at least 55 mole percent of the dicarboxylic acid components are 2,5-dibromoterephthalic acid moieties, are particularly well suited for forming fire-retardant hydrophilic/polyester yarn blends. The polyester component of the blend comprise from 35 to 85% by weight with correspondingly 65 to 15% by weight hydrophilic yarn depending upon the aesthetic properties desired. suitable hydrophilic fibers include cotton, wool, linen, silk, rayon, regenerated cellulose, etc.

Application No.: 10/803384
Docket No.: HT4000USNA

Page 9

Yet at the point of redundancy, the following conclusion is repeated from the Office position:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cotton fibers to the yarn, as taught by Nelson, because the cotton fibers would provide the fire-retardant yarn with the desired aesthetic hand properties, moisture absorption properties, and minimized static electricity and because some applications desire hand properties, moisture absorption properties, and/or minimized static electricity properties over increased fire-retardant properties.

It is respectfully submitted that the above conclusion is incorrect and misleading generalization from the disclosure of teachings of Nelson. This point perhaps can be directly made from a quotation of the Abstract of Nelson, namely:

ABSTRACT

This invention relates to poly(tetramethylene 2,5-dibromoterephthalate). More particularly this invention relates to self-extinguishing poly(tetramethylene 2,5-dibromoterephthalate) fibers.

Reconsideration and withdrawal of the Office position is requested since

- (1) an incorrect generalization is made with a direct disclosure of Nelson stating blends of polyester and hydrophilic have poorer fire-retardant properties than the individual fibers and
- (2) reliance on cotton providing desired properties (from a list including wool, linen, silk, rayon, regenerated cellulose, etc.) ignores the added requirement of Nelson of a need in the invention of use of poly(tetramethylene 2,5-dibromoterephthalate) in order to provide self-extinguishing properties.

Issue No. 5: Disclosure of Campbell USP 6,787,228 is broader than set forth in paragraph 4 of Office communication.

The purpose of this section is to point out that the disclosure of Campbell sets forth use of both meta-aramid and para-aramid fibers which disclosure is broader than the Office position.

Paragraph 4, of the Office communication states "but Campbell does not specifically mention the use of both meta-aramid and para-aramid fibers." In reply,

Application No.: 10/803384
Docket No.: HT4000USNA

Page 10

Campbell on column 5, lines 12 and 13 discloses in construction D use of Nomex® which is a meta-aramid and Kevlar® which is a para-aramid.

REJECTIONS UNDER 35 U.S.C. 103(A)

Paragraph 3 of the Office communication sets forth a rejection of claims 1, 11, 13-14, and 19 based on Campbell USP 6,787,228 in view of Nelson USP 4,025,491.

In answer the deficiencies of Campbell have been set forth in Issues 2 and 3 while the deficiencies of Nelson have been set forth in Issue 4. It is submitted that one of ordinary skill in the art would not lower the acrylonitrile fiber content of Campbell and introduce the claimed amount of cotton based on Nelson. Also, Nelson is non-analogous to the environment of Campbell since Nelson is directed to self-extinguishing poly(tetramethylene 2,5 dibromoterephthalate) fibers.

Paragraph 4 of the Office communication sets forth a rejection of claims 3-5 and 15-17 in view of the two publications applied in paragraph 3 further in view of Smith, Jr. USP 4,865,906. It is believed Smith is applied to disclose use of both meta and para aramids in combination. Applicant has pointed out in Issue 5 that Campbell discloses such use. Since the combination of publications of paragraph 3 fails for the stated reasons, a rejection based on Smith, Jr. does not cure the deficiencies.

Paragraph 5 of the Office communication sets forth a rejection of claims 6-8 based on the three publications of paragraph 4 further in view of Gadoury USP 5,824,614. The latter publication is applied only to disclose an anti-static component. These claims represent a patentable advance in the art for the same reasons as set forth in traversal of the earlier applied publications.

Paragraph 6 of the Office communication sets forth a rejection of claims 9-10 and 18 based on the same two publications applied in paragraph 3 further in view of Gadoury. Again these claims represent a patentable advance in the art and for the reasons set forth in traversal of the initial two publications.

Paragraph 7 of the Office communication sets forth a rejection of claims 1, 3-5, 11, 13-17 based on Smith USP 4,865,906 in view of Nelson.

This paragraph sets forth wording "Smith discloses . . . 25 to 85 weight percent polyacrylonitrile."

In response the Office wording is incorrect since Smith discloses oxidized polyacrylonitrile. Oxidized polyacrylonitrile is chemically different from

Application No.: 10/803384
Docket No.: HT4000USNA

Page 11

polyacrylonitrile and modacrylic. As evidenced by the accompanying Declaration Under 37 C.F.R. 1.132 by Dr. Keiyao Zhu, the inventor of the present patent application a statement is present that oxidized polyacrylonitrile is not a modacrylic.

The following wording is present in Dr. Zhu's Declaration:

That I state in summary Smith, Jr. USP 4,865,906 has no relevance to my patent application since oxidized polyacrylonitrile fiber is chemically different from modacrylic fiber.

A detailed technical analysis is provided in the Declaration including carbonization of a starting material with polyacrylonitrile specifically named.

Since the Office interpretation of Smith is incorrect, any combination with a secondary publication such as Nelson likewise fails. Accordingly, reconsideration and withdrawal of the Office position is requested.

Paragraph 8 of the Office communication sets forth a rejection of claims 6-10 and 18 based on the two publications of paragraph 7 further in view of Gadoury. Since this latter publication does not cure the deficiencies of the earlier applied publications, it is respectfully submitted this rejection likewise fails.

Withdrawal of all grounds of rejection is requested. A notice of allowance is solicited.

Application No.: 10/803384
Docket No.: HT4000USNA

Page 12

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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